IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

SIVAVEC et al.

Application No.: 09/682,142

Filed: July 26, 2001

For: PERMEABLE-REACTIVE BARRIER MONITORING METHOD AND SYSTEM

Group Art Unit: 3673

Examiner: Katherine W. Mitchell

RESPONSE TO BOARD OF PATENT APPEALS AND INTERFERENCES ORDER

Mail Stop Appeal Briefs - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached are three (3) copies of APPENDIIX to be attached to Appellants' BRIEF ON APPEAL in the above-identified application. The APPENDIX includes a correct copy of the CLAIMS on appeal as specified by the August 26, 2004 ORDER of the Board of Patent Appeals And Interferences

Appellants respectfully request docketing of this appeal for immediate and favorable disposition.

Respectfully submitted,

Philip D. Freedman
Reg. No. 24,163
Philip D. Freedman PC
Customer Number 25101
P.O. Box 19076
Alexandria, Virginia 22320
703-313-0171
tekesq@tekesq.com

Alexandria, Virginia
13 SEP, 2004

APPENDIX

CLAIMS

1. A method, comprising:

conducting a permeable-reactive barrier (PRB) treatment of a contaminated aqueous medium; and

in-well monitoring by sensing effectiveness of the PRB treatment to generate a signal representing a characteristic of the sensed effectiveness; and

in-well transmitting the signal by a wireless communication to a remote collector or monitor.

2. The method of claim 1, wherein the in-well monitoring is conducted by at least one well placed up to about 25 feet up-gradient of the PRB and at least one well placed up to about 25 feet down-gradient of the PRB.

3. The method of claim 1, wherein the in-well monitoring is conducted by at least one well placed about 1 to about 6 feet up-gradient of the PRB and at least one well placed about 1 to about 6 feet down-gradient of the PRB.

4. The method of claim 1, wherein the in-well monitoring is conducted by at least one well placed about 2 to about 4 feet up-gradient of the PRB and at least one well placed about 2 to about 4 feet down-gradient of the PRB.

5. The method of claim 1, wherein the in-well monitoring is conducted by a plurality of wells arranged substantially along a transect to a PRB zone.

6. The method of claim 1, wherein the in-well monitoring is conducted by a plurality of in-well sensors arranged substantially along a transect to a PRB zone and the transect is defined by a ± 20 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 5 feet of an open screen interval mid point of each well.

7. The method of claim 1, wherein the in-well monitoring is conducted by a plurality of in-well sensors arranged substantially along a transect to a PRB zone

and the transect is defined by a ± 10 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 3 feet of a mid point of an open screen interval mid point of each well.

8. The method of claim 1, wherein the in-well monitoring is conducted by a plurality of in-well sensors arranged substantially along a transect to a PRB zone and the transect is defined by a ± 6 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 1 feet of an open screen interval mid point of each well.

9. The method of claim 1, wherein the in-well monitoring is conducted by a plurality of in-well sensors arranged substantially along a transect to a PRB zone, wherein the transect is defined by flow of contaminated aqueous medium.

10. The method of claim 1, comprising determining flow of contaminated aqueous medium up-gradient, down-gradient and transecting a PRB zone, placing monitoring wells along the flow of contaminated medium and conducting the in-well monitoring with the monitoring wells.

11. The method of claim 1, comprising determining flow of contaminated aqueous medium up-gradient, down-gradient and transecting a PRB zone, placing monitoring wells along the flow of contaminated medium and conducting the in-well monitoring with the monitoring wells, wherein at least one monitoring sensor is placed in-well up-gradient of the PRB zone.

12. The method of claim 1, comprising determining flow of contaminated aqueous medium up-gradient, down-gradient and transecting a PRB zone, placing monitoring wells along the flow of contaminated medium and conducting the in-well monitoring with the monitoring wells, wherein at least one monitoring sensor is placed in-well down-gradient of the PRB zone.

13. The method of claim 1, comprising determining flow of contaminated aqueous medium up-gradient, down-gradient and transecting a PRB zone, placing monitoring wells along the flow of contaminated medium and conducting the in-well

monitoring with the monitoring wells, wherein at least one monitoring sensor is placed in-well within the PRB zone.

14. The method of claim 1, comprising determining flow of contaminated aqueous medium up-gradient, down-gradient and transecting a PRB zone, placing monitoring wells along the flow of contaminated medium and conducting the in-well monitoring with the monitoring wells, wherein at least one monitoring sensor is placed in-well up-gradient of the PRB zone, at least one monitoring sensor is placed in-well down-gradient of the PRB zone and at least one monitoring sensor is placed within the PRB zone.

15. The method of claim 1, comprising monitoring effectiveness by measuring at least one of pH, oxidation-reduction potential and specific conductivity.

16. The method of claim 1, comprising determining nature, extent and velocity of a plume of contaminated aqueous medium and conducting the PRB treatment of the contaminated aqueous medium.

17. The method of claim 1, comprising selecting and providing a barrier zone of reactive material and conducting the PRB treatment with the barrier zone.

18. The method of claim 17, comprising excavating a trench suitable for receiving the reactive material and placing the reactive material within the trench to provide the barrier zone.

19. The method of claim 18, comprising locating the trench so that the reactive material therein lies in the path of a plume of the contaminated aqueous medium.

20. The method of claim 1, wherein the in-well monitoring is accomplished with a sensor containing monitoring well located in the vicinity of a PRB zone.

21. The method of claim 1, wherein the in-well monitoring is accomplished with monitoring wells placed up-gradient and down-gradient of a PRB zone.

22. The method of claim 1, wherein the in-well monitoring is accomplished with a monitoring well placed within the reactive material of a PRB zone.

23. A method of treating a contaminated groundwater, comprising:

sensing a characteristic of the contaminated groundwater with a sensor placed in at least one well emplaced substantially along a transect of a longitudinal axis of a PRB zone; and

remotely monitoring the sensing to determine effectiveness of a remediation treatment of the groundwater.

24. The method of claim 23, wherein a characteristic of the contaminated groundwater is sensed with a sensor placed within the well.

25. The of claim 23, wherein a characteristic of the contaminated groundwater is sensed with a sensor placed up-gradient and a sensor placed down-gradient of the PRB.

26. The method of claim 23, wherein the sensors are placed substantially along a transect to a PRB zone and the transect is defined by a ± 20 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 5 feet of a mid point of each well open screen interval.

27. The method of claim 23, wherein the sensors are placed substantially along a transect to a PRB zone and the transect is defined by a ± 10 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 3 feet of a mid point of each well open screen interval.

28. The method of claim 23, wherein the sensors are placed substantially along a transect to a PRB zone and the transect is defined by a ± 6 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 1 feet of a mid point of each well open screen interval.

29. The method of claim 23, wherein a characteristic of the contaminated groundwater is sensed with a sensor placed up-gradient of the PRB, a sensor placed down-gradient of the PRB and a sensor placed within the PRB.

30. The method of claim 23, comprising adjusting the treatment of contaminated groundwater according to the monitoring.

31. The method of claim 23, wherein the monitoring comprises sensing a contaminant and transmitting a signal concerning the contaminant to a data collector.

32. The method of claim 31, wherein the data collector collects the signal and transmits information concerning the contaminant derived from the signal.

33. The method of claim 32, wherein the collector transmits the information to a remote monitor.

34. The method of claim 33, wherein the information is transmitted over a web connection, phone modem connection, radio connection, network connection, wireless connection, cellular connection, satellite connection, Internet connection or combinations thereof.

35. The method of claim 33, further comprising outputting a contaminant report from the remote monitor.

44. A system, comprising:

a PRB zone to treat a contaminated groundwater;

an in-well sensor located within a gradient of the contaminated groundwater or within the PRB zone to sense a characteristic of the groundwater; and

a transmitter associated with the sensor in well to wirelessly transmit a signal concerning the characteristic..

45. The system of claim 44, additionally comprising a monitor to receive information concerning the characteristic from the sensor.

46. The system of claim 45, wherein the monitor is situated at a location remote from the PRB zone.

47. The system of claim 44, comprising at least one well placed up to about 25 feet up-gradient of the PRB and at least one well placed up to about 25 feet down-gradient of the PRB.

48. The system of claim 44, comprising at least one well about 1 to about 6 feet up-gradient of the PRB and at least one well placed about 1 to about 6 feet down-gradient of the PRB.

49. The system of claim 44, comprising at least one well placed about 2 to about 4 feet up-gradient of the PRB and at least one well placed about 2 to about 4 feet down-gradient of the PRB.

50. The system of claim 44, comprising a plurality of in-well sensors placed within the gradient of the contaminated groundwater or within the PRB zone.

51. The system of claim 50, wherein the sensors of the plurality are located along a transect of the PRB zone.

52. The system of claim 51, wherein the transect is defined by a ± 20 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 5 feet of an open screen interval mid point of each well.

53. The system of claim 51, wherein the transect is defined by a ± 10 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 3 feet of an open screen interval mid point of each well.

54. The system of claim 51, wherein the transect is defined by a ± 6 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 1 feet of an open screen interval mid point of each well.

55. The system of claim 44, further comprising a transmitter associated with a sensor to transmit a signal concerning the characteristic.

56. The system of claim 55, further comprising a collector to receive the signal from the transmitter.

57. The system of claim 56, further comprising a collector to receive the signal from the transmitter.

58. The system of claim 57, further comprising a communication link that interconnects the collector and the monitor, the communication link capable of transmitting the signal to enable a user at the monitor to obtain information concerning the contaminant.

59. The system of claim 58, wherein the communication link comprises a web connection.

60. The system of claim 58, wherein the communication link comprises a network.

61. The system of claim 58, wherein the communication link comprises at least one selected from the group consisting of a phone modem connection, radio communication connection, network communication connection, wireless communication system connection, cellular communication connection, satellite communication connection, web connection and Internet connection.

62. The system of claim 58, further comprising a two-way communicator between the collector and the sensor to permit selection, activation, de-activation, modification, fine-tuning, manipulation or resetting of the sensor.

63. The system of claim 58, wherein the sensor comprises at least one selected from the group consisting of a vapor sensor, chemical sensor, fiber optics sensor, acoustic wave sensor solid-state sensor, metal oxide sensor and an electrochemical sensor.

64. The system of claim 44, comprising a plurality of sensors emplaced in a respective plurality of wells arranged substantially along a transect to the PRB zone.

65. The system of claim 44, comprising a plurality of sensors emplaced in a respective plurality of wells arranged substantially along a longitudinal axis of the PRB zone facing flow of the contaminated aqueous medium.

66. A system, comprising:

a PRB zone to treat a contaminated groundwater; and

a sensor located in a monitoring well substantially along a PRB zone transect of flow of the contaminated groundwater from an up-gradient location, across the PRB zone to a down-gradient location;

wherein the transect of flow is defined by a ± 6 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 1 feet of an open screen interval mid point of each well. .